

ABSTRACT OF THE DISCLOSURE

An approach for processing data received from a communications channel that minimizes noise power and optimizes impulse response length to reduce interference, such as from inter-symbol interference (ISI) and inter-channel interference (ICI), is disclosed. For example, finite impulse response (FIR) filtering may be used with FIR coefficients that are determined by optimizing a function of the impulse response length and the noise power. The impulse response length is optimized based on the communications channel transfer function to reduce interference. The noise power is minimized based on the noise covariance as determined using the total noise power density. The approach accounts for noise from a variety of interference sources besides ISI and ICI. The result is a superior equalizer for use in communications receivers employing orthogonal frequency division multiplexing or discrete multitone modulation in communications protocols employing Asymmetric Digital Subscriber Line, G.Lite and Very High Bit Rate DSL.